

REMARKS/ARGUMENTS

This Amendment is responsive to the Office Action dated April 17, 2009. Claims 1-5, 9-12, 15-18, 30-31, 34 and 36 were pending in the application. In the Office Action, Claims 1-5, 9-12, 15-18, 30-31, 34 and 36 were rejected. In this Amendment, Claims 1-3 and 18 were amended, Claims 10-11, 15, 30-31 and 34 were cancelled and Claims 37-42 were added. Claims 1-5, 9, 12, 16-17, 36-42 remain for consideration.

Applicant submits that Claims 1-5, 9, 12, 16-17, 36-42 are in condition for allowance and requests withdrawal of the rejections in light of the following remarks.

A. Claim Rejections Under 35 U.S.C. §112, second paragraph

Claim 3 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the invention. Specifically, the recitation of “a second breathable film located on a second surface thereof” renders the claim vague and indefinite.

Claim 3 has been amended to overcome the above rejection. Accordingly, the above rejection is traversed.

B. Claim Rejections Under 35 U.S.C. §112, first paragraph

Claim 15 was rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Specifically, the claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention.

Claim 15 has been cancelled. Accordingly, the above rejection is considered moot. However since similar claim language appears in some of the pending claims, Applicant will address the above rejection.

The Examiner states that the specification teaches using EMA as a component in a tie layer but does not teach blending the EMA with the breathable polymer layer. Applicant respectfully disagrees. The specification on Page 9, ¶¶[0041] and [0042] discusses that the most preferred material as a tie layer is EMA and the tie layer may be applied during the formation of the breathable thermoplastic film. This means that the EMA may be blended with the breathable film during its formation and due to EMA's lower viscosity with respect to the thermoplastic film the EMA effectively becomes a tie layer. This is true because EMA blooms on the outside surfaces of the breathable film due to EMA's lower viscosity. This was a very important feature of EMA when it was chosen as the adhesion component because it allows the film to adhere to the substrate better and does not destroy the breathability of the underlayment.

C. Claim Objections

Claim 2 was objected to because of an informality. Specifically maleic is spelled incorrectly.

Claim 2 was amended to overcome the above objection. Accordingly, the above objection should be removed.

D. Claim Rejections Under 35 U.S.C. § 103(a)

1. Claims 1-5, 9-12, 15-17 and 36 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over WO 9637668 in view of Corzani et al (U.S. Patent App. Pub. No. 2003/0194566).

Applicant submits that independent Claim 1 is patentable over WO 9637668 and Corzani.

Applicant's amended claim 1 recites:

"A non-asphaltic underlayment comprising:

a glass fiber-based substrate in which a first surface thereof is directly adhered to a breathable thermoplastic film having a minimum thickness of 2 mils, **the breathable thermoplastic film comprises a thermoplastic polyurethane blended with about 40 to 60% ethylene methacrylate polymer**, wherein the ethylene methacrylate polymer acts as an adhesion improvement component that improves adhesion between the breathable thermoplastic film and the glass fiber-based substrate, said breathable thermoplastic film imparts water-resistance to the underlayment while maintaining breathability thereof, the breathable thermoplastic film having a minimum moisture vapor transmission rate of greater than about 3 perms." (Emphasis Added).

The combination of WO 9637668 and Corzani does not disclose a breathable thermoplastic film that comprises a thermoplastic polyurethane blended with about 40 to 60% ethylene methacrylate polymer.

WO 9637668 discloses an air barrier for installation on roofs. The air barrier may include a water vapor permeable layer bonded to a fabric layer but, as Examiner admits, WO '668 does not teach blending an adhesion promoter into the vapor permeable layer.

To overcome the deficiencies of WO '668, the Examiner relies upon Corzani to teach blending an additional component into the vapor permeable layer of WO '668. Corzani, however, does not provide a reasonable amount of guidance with respect to its additional

components for bond strength. Corzani merely provides a laundry list of additional components that may be added to the vapor layer but never teaches ranges of those components or why one component is better suited than other components for certain purposes.

The present invention is directed towards a breathable thermoplastic film that comprises a thermoplastic polyurethane blended with about 40 to 60% ethylene methacrylate polymer. Specifically, during experimentation, it was found that EMA was a good compatibilizer for the present invention but if too little EMA (<40%) was blended with the TPU that the breathable thermoplastic film would have too much breathability and thus would limit the functionality of the underlayment. It was also found that if too much EMA (>60%) was added to the TPU that the breathable thermoplastic film would have too little breathability and thus would effect the functionality of the underlayment. Accordingly, the present invention is not obvious over the combination of WO'668 and Corzani because the present invention has a very specific range (40-60%) for ethylene methacrylate polymer (EMA) to achieve a breathable thermoplastic film having a minimum moisture vapor transmission rate of greater than about 3 perms.

Since the combination of WO '68 and Corzani does not disclose a breathable thermoplastic film that comprises a thermoplastic polyurethane blended with about 40 to 60% ethylene methacrylate polymer and does not give any direction or guidance on the range or best suited adhesion component, Applicant believes that independent Claim 1 is patentable over WO '668 and Corzani – taken either alone or in combination.

Claims 2-5, 9, 12, 16-17 and 36 depend on claim 1. Since Claim 1 is believed to be patentable over WO 9637668 and Corzani, Claims 2-5, 9, 12, 16-17 and 36 are believed to be patentable over WO 9637668 and Corzani on the basis of their dependency on Claim 1.

2. Claim 18 was rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Topolkaraev (U.S. Patent App. Pub. No. 2003/0091677) in view of Krueger (U.S. Patent No. 5,691,034).

Applicant submits that independent Claim 1 is patentable over Topolkaraev and Krueger.

Applicant's amended claim 18 recites:

"A non-asphaltic underlayment comprising a substantially non-water-resistant polypropylene substrate in which at least a top surface thereof is directly adhered to a polyurethane based thermoplastic film, said polyurethane based thermoplastic film imparts water-resistance to the underlayment while maintaining breathability of the underlayment, the breathable thermoplastic film having a minimum moisture vapor transmission rate of 3 perms or greater, the polyurethane based thermoplastic film being blended with about 40 to 60% ethylene methacrylate polymer to improve adhesion between the polyurethane based thermoplastic film and the substantially non-water-resistant polypropylene substrate." (Emphasis Added).

Topolkaraev and Krueger do not disclose a polyurethane based thermoplastic film that is blended with about 40 to 60% ethylene methacrylate polymer to improve adhesion between the polyurethane based thermoplastic film and the substantially non-water-resistant polypropylene substrate. Therefore, Applicant believes that independent Claim 18 is patentable over Topolkaraev and Krueger – taken either alone or in combination.

3. Claims 30 and 34 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over WO 9637668 in view of Corzani et al (U.S. Patent App. Pub. No. 2003/0194566) as applied to the claims above, and further in view of Krueger (U.S. Patent No. 5,691,034).

Claims 30 and 34 were cancelled. Therefore, the above rejection is considered moot.

4. Claims 31 and 34 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over WO 9637668 in view of Corzani et al (U.S. Patent App. Pub. No. 2003/0194566) as applied to the claims above, and further in view of George et al. (U.S. Patent No. 4,282,283).

Claims 31 and 34 were cancelled. Therefore, the above rejection is considered moot.

E. New Claims

Applicant submits that independent Claim 37 is patentable over the prior art of record. Applicant's independent Claim 37 recites:

“A non-asphaltic underlayment comprising:

a breathable thermoplastic film comprising a thermoplastic polyurethane blended with (a) about 40 to 60% ethylene methacrylate polymer, the ethylene methacrylate polymer acting as an adhesion improvement component, (b) 5% or less of an anti-oxidant and/or UV stabilizers, and (c) 5% or less of carbon black; and

a substrate, the substrate having a thickness of about 6 to 60 mils, the substrate being air sprayed with more than two mils but less than 10 mils of the breathable thermoplastic film, wherein the breathable thermoplastic film imparts water-resistance to the underlayment while maintaining breathability thereof as defined in ASTM E96 standard.” (Emphasis Added).

As discussed above, the prior art of record does not disclose a breathable thermoplastic film that is blended with about 40 to 60% ethylene methacrylate polymer. Therefore, Applicant believes that independent Claim 37 is patentable over the prior art of record – taken either alone or in combination.

Claims 38-42 depend on claim 37. Since Claim 37 is believed to be patentable over the prior art of record, Claims 38-42 are believed to be patentable over the prior art of record on the basis of their dependency on Claim 37.

CONCLUSION

In view of the aforementioned remarks and amendments, the Applicant believes that each of the pending claims is in condition for allowance. If, upon receipt and review of this amendment, the Examiner believes that the present application is not in condition for allowance and that changes can be suggested which would place the claims in allowable form, the Examiner is respectfully requested to contact Applicant's undersigned counsel at the number provided below.

The Director is hereby authorized to charge any fees that may be associated with this filing or credit any overpayment of same, to Deposit Account No. 03-1250, under Reference No. FDN-2815, Customer No. 43,309.

Respectfully submitted,

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